Adaptec Ultra Wireless™ PCI Adapter

User's Guide

adaptec®

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WARNING: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

You are cautioned that changes or modifications not expressly approved by the part responsible for compliance could void your authority to operate the equipment.

Adaptec, Inc.	AWN-8010
FC	Tested to Comply With FCC Standards
FOR HOME OR OFFICE USE	

Federal Communications Commission (FCC) Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body.

CE Mark Warning

This is a Class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

Canadian Compliance Statement

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

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Getting Started

This *User's Guide* provides detailed instructions for installing and configuring your Adaptec AWN-8010 Ultra Wireless PCI Adapter. See the *Installation Task List* on page 4 for an overview of the installation process.

This *Guide* also includes a basic overview of wireless and Local Area Network (LAN) technology (see page 43) suitable for novice users. It assumes you have a working knowledge of your computer and are familiar with the Windows Operating System.

Note: Your Wireless PCI Adapter is only one element of your Wireless LAN (WLAN). Installing this product alone will not create a wireless network. See *About Wireless Technology and LANs* on page 43 for information on the minimum requirements for creating a WLAN.

Kit Contents

Your Wireless PCI Adapter kit includes:

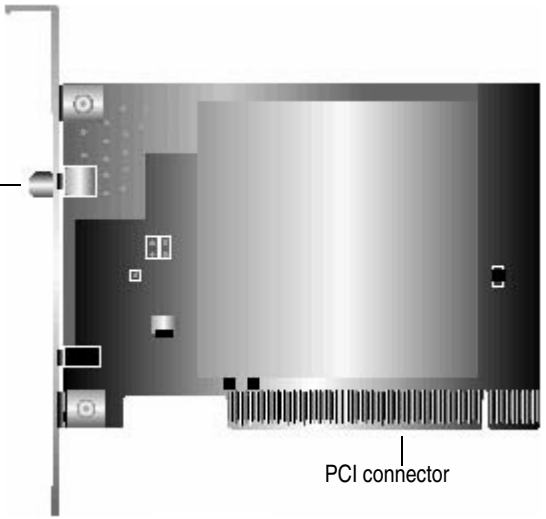
- Adaptec AWN-8010 Ultra Wireless PCI Adapter
- External antenna
- Ultra Wireless PCI CD, which contains software drivers, documentation, and the Adaptec Wireless Utility
- *Ultra Wireless PCI Adapter Quick Start Guide*

System Requirements

To use your Wireless PCI Adapter, you need a PC-compatible desktop computer with:

- Pentium-class 90MHz (or faster) processor
- Microsoft Windows® 98SE, Windows Me®, Windows 2000®, or Windows XP®
- CD-ROM drive
- Available PCI slot

This is Your Wireless PCI Adapter



LINK LED
Flashes while the adapter searches for a wireless connection, then becomes steady when the connection is made. (There is no wireless connection when the LED is flashing.)

PWR LED
Glows steady when the adapter is receiving power. This LED goes dark when the power is turned off.

Installation Task List

To successfully install your Wireless PCI Adapter, complete each of these tasks, in order:

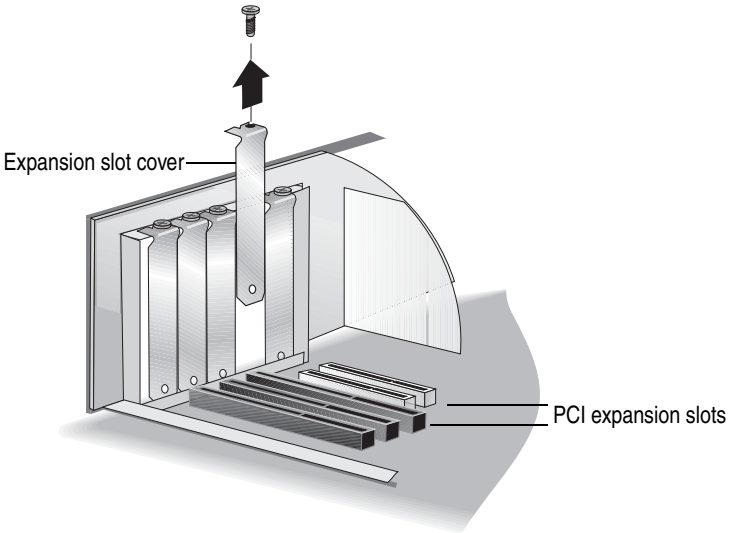
- ❏ If you are unfamiliar with wireless technology or LANs, read *About Wireless Technology and LANs* on page 43 for a basic overview.
- ❏ Install the Wireless PCI Adapter. See page 5.
- ❏ Install the device driver for your computer's operating system. See page 7.
- ❏ Install the Adaptec Wireless Utility. See page 18.
- ❏ Disable Zero Configuration *(Windows XP users only)*. See page 22.
- ❏ Install the network protocols. See page 24.
- ❏ Connect to the WLAN. See page 28.

Basic installation takes approximately 20 minutes to complete.

Installing the Wireless PCI Adapter

To install your Wireless PCI Adapter:

1. Discharge any static electricity build-up before handling the adapter by touching a grounded metal object (such as the exposed metal parts on the back of your computer).
2. Turn off power to the computer and disconnect the power cord. Open the computer cabinet, following the manufacturer's instructions.
3. Locate an unused PCI expansion slot and remove the expansion slot cover. Save the slot cover screw for use in Step 6.



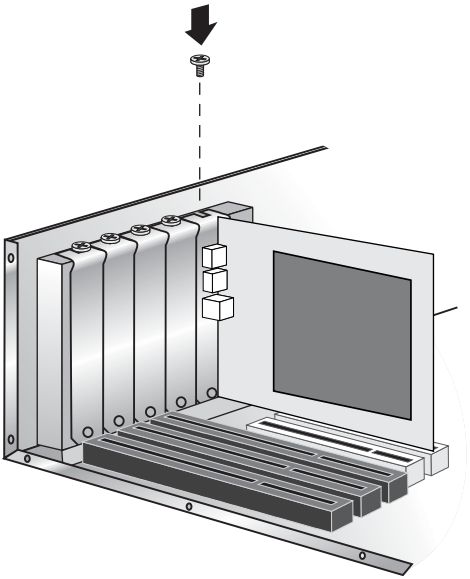
4. Remove the Wireless PCI Adapter from its antistatic packaging.

> **Caution:** *Always* handle the adapter by its edges or metal bracket. Do not touch the gold PCI connector or any components on the adapter.

5 Insert the Wireless PCI Adapter into the PCI expansion slot. Press down firmly until the adapter clicks into place. When installed properly, the adapter should appear level with the expansion slot.

Note: Depending on the tightness of the PCI slot, gentle but firm force may be required to insert the adapter.

6 Secure the adapter bracket with the slot cover screw you removed in Step 3.



7 Close the computer cabinet and reattach the power cord.

8 Plug the external antenna into the SMA port on the Wireless PCI Adapter.

9 Power on the computer.

See *Installing the Device Driver* on page 7 to continue with your next task.

Installing the Device Driver

Before you continue, ensure that you have:

❏ Reviewed *About Wireless Technology and LANs* on page 43 for a basic overview of WLANs.

❏ Installed the Wireless PCI Adapter. See page 5.

The next step on the Installation Task List (page 4) is to install the *device driver*. A device driver is a software program that lets your adapter communicate with your computer.

To install the device driver, follow the instructions for your operating system:

- For Windows XP, see page 8.
- For Windows 2000, see page 10.
- For Windows Me, see page 13.
- For Windows 98SE, see page 15.

Windows XP Driver Installation

To install the device driver on Windows XP:

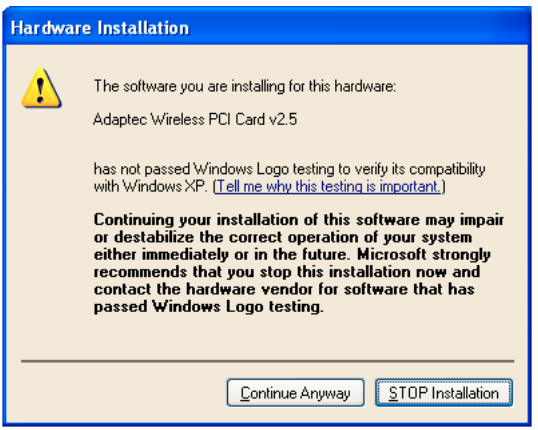
1 Install the Wireless PCI Adapter into your computer. See page 5.

Windows XP automatically detects the Wireless PCI Adapter and opens the Found New Hardware Wizard.

2 Insert the Ultra Wireless PCI CD into your CD-ROM drive.

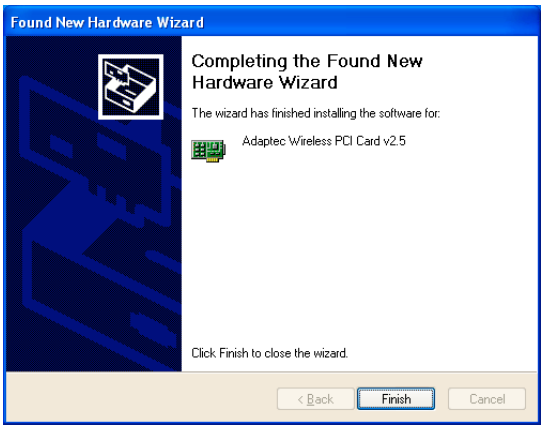
3 In the Found New Hardware Wizard, select **Install the software automatically...**, then click **Next**.

4 Click **Continue Anyway**.



Windows XP installs the driver.

5 Click **Finish**.



The device driver installation is complete.

Windows XP automatically begins the next installation task by opening the software installation wizard for the Adaptec Wireless Utility. Go to *Installing the Adaptec Wireless Utility* on page 18 to continue.

Windows 2000 Driver Installation

To install the device driver on Windows 2000:

1 Install the Wireless PCI Adapter into your computer. See page 5. Power on your computer, if it isn't already running.

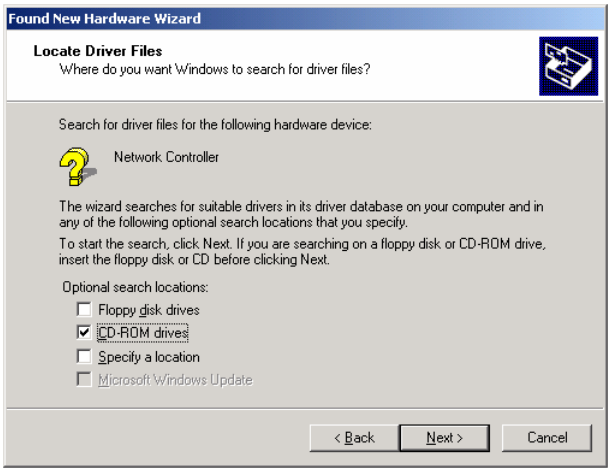
Windows 2000 automatically detects the Wireless PCI Adapter and opens the Found New Hardware Wizard.

2 Click **Next**.

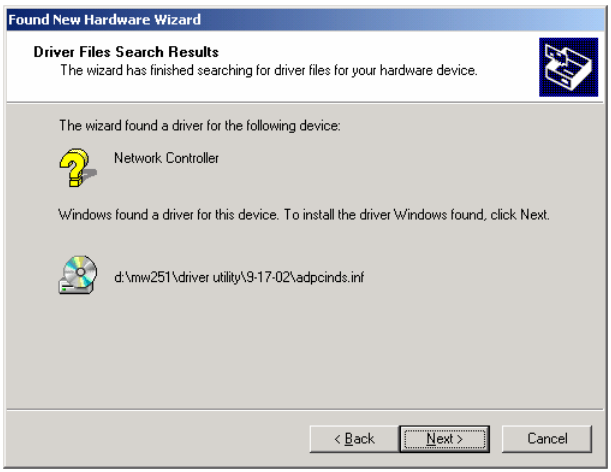
3 Select **Search for a suitable driver...**, then click **Next**.

4 Insert the Ultra Wireless PCI CD into your CD-ROM drive.

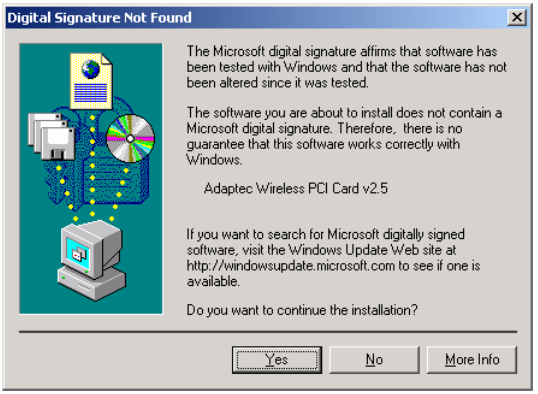
5 Select **CD-ROM driver**, then click **Next**.



6 Click **Next**.



7 Click **Yes**.



8 Click **Finish**.

The device driver installation is complete.

Windows 2000 automatically begins the next installation task by opening the software installation wizard for the Adaptec Wireless Utility. Go to *Installing the Adaptec Wireless Utility* on page 18 to continue.

Windows Me Driver Installation

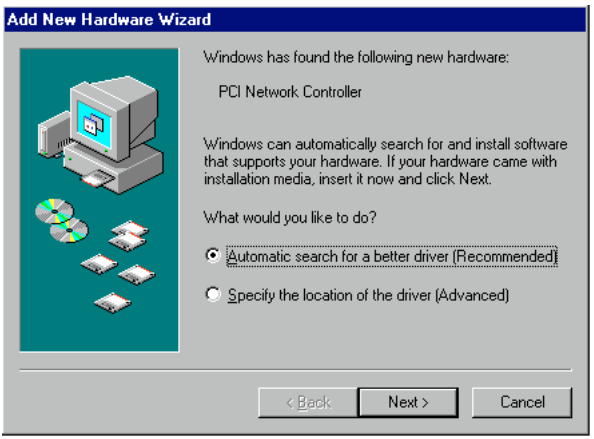
To install the device driver on Windows Me:

1 Install the Wireless PCI Adapter into your computer. See page 5.

Windows Me automatically detects the Wireless PCI Adapter and opens the Add New Hardware Wizard.

2 Insert the Ultra Wireless PCI CD into your CD-ROM drive.

3 Select **Automatic search for a better driver...**, then click **Next**.



4 Click **Finish**.

5 Click **Yes** to restart your computer.

When the restart is complete, Windows Me automatically begins the next installation task by opening the software installation wizard for the Adaptec Wireless Utility. Go to *Installing the Adaptec Wireless Utility* on page 18 to continue.

Windows 98SE Driver Installation

To install the device driver on Windows 98SE:

1 Install the Wireless PCI Adapter into your computer. See page 5.

Windows 98SE automatically detects the Wireless PCI Adapter and opens the Add New Hardware Wizard.

2 Click **Next**.

3 Select **Search for the best driver...**, then click **Next**.

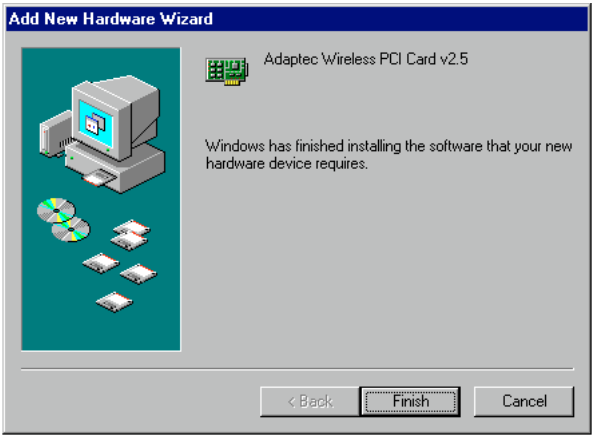
4 Insert the Ultra Wireless PCI CD into your CD-ROM drive.

5 Select **CD-ROM drive**, then click **Next**.

6 Click **Next**.

Windows 98SE copies files to your hard drive.

7 Click **Finish**.



8 Click **Yes** to restart your computer.

When the restart is complete, Windows 98SE automatically begins the next installation task by opening the software installation wizard for the Adaptec Wireless Utility. Go to *Installing the Adaptec Wireless Utility* on page 18 to continue.

Installing the Adaptec Wireless Utility

Before you continue, make sure that you have:

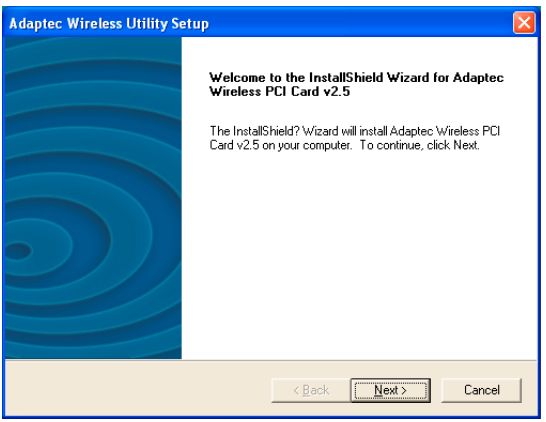
- ❏ Reviewed *About Wireless Technology and LANs* on page 43 for a basic overview of WLANs.
- ❏ Installed the Wireless PCI Adapter. See page 5.
- ❏ Installed the device driver. See page 7.

The next step on the Installation Task List (see page 4) is to install the Adaptec Wireless Utility, a software application that helps you configure your Wireless PCI Adapter.

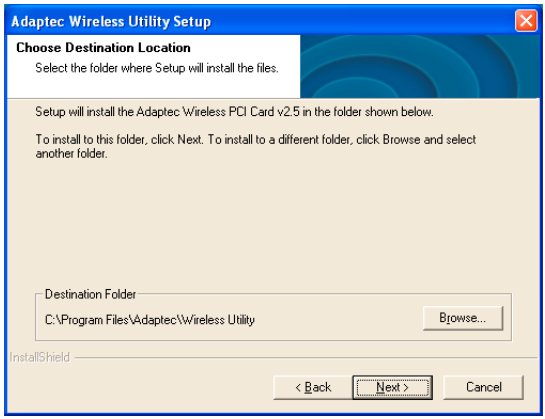
When the device driver installation is complete, Windows automatically opens InstallShield, an installation wizard that will help you install the Adaptec Wireless Utility.

To complete the software installation:

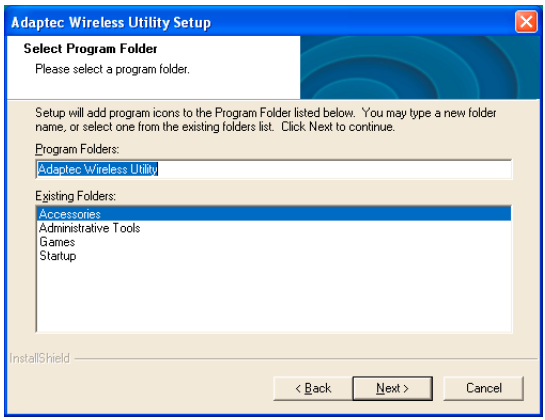
1 Click **Next**.



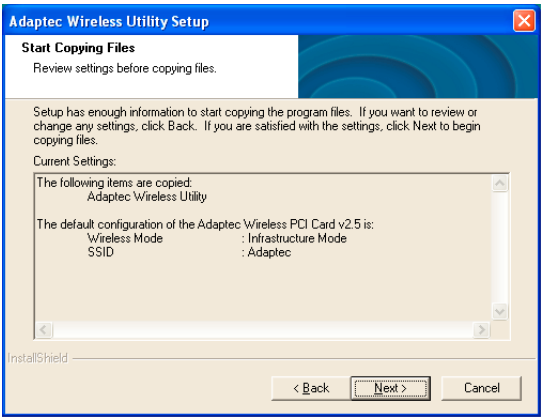
2 The installation wizard chooses a default destination folder for the software files. Click **Next** to accept the default destination (recommended), or click **Browse** to select an alternate destination.



3 You can choose where to store program icons in the Program Folder. Type a new folder name or select one from the Existing Folders list. Click **Next**.

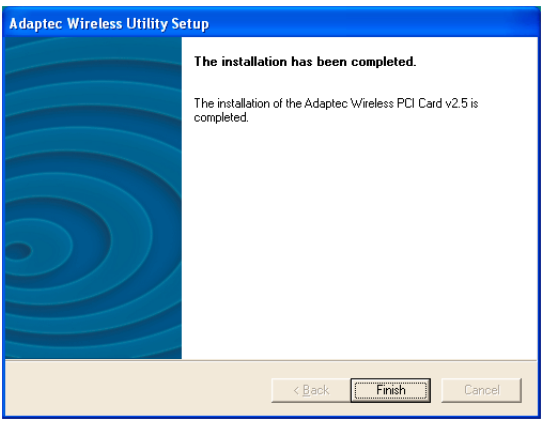


4 Click **Next**.



The software installation begins. The Setup Status appears on screen.

5 Click **Finish**.



Note: *Windows XP users only*—Windows XP has a built-in configuration application called Zero Configuration, which automatically takes over as the default utility for your Wireless PCI Adapter.
When the Adaptec Wireless Utility installation is complete, a message appears telling you that you must disable Windows Zero Configuration before using the Adaptec Wireless Utility. Adaptec recommends that you use the Adaptec Wireless Utility instead of the Windows application. For more information, see *Disabling Zero Configuration (Windows XP only)* on page 22.

The software installation is complete. The Adaptec Wireless Utility icon appears on your Windows taskbar, as shown below. (Your system may automatically restart first.)

Adaptec Wireless Utility icon

See *Installing Network Protocols* on page 24 to continue.

Note: If you are using Windows XP and you choose to keep Zero Configuration as the default utility for your Wireless PCI Adapter, you are finished the Installation Task List (page 4). Refer to your Windows XP documentation to continue the installation and set-up.

Disabling Zero Configuration *(Windows XP only)*

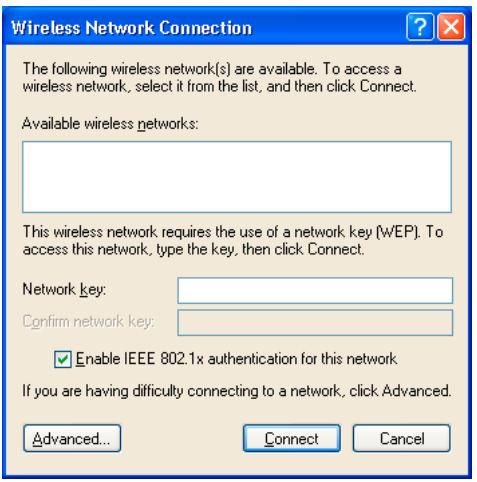
Although the Adaptec Wireless Utility is installed on your Windows XP system, Windows XP has a built-in configuration application called Zero Configuration that automatically takes over as the default utility for your Wireless PCI Adapter. To use the Adaptec Wireless Utility, you must first disable Zero Configuration.

Although Zero Configuration is similar to the Adaptec Wireless Utility in functionality, the Adaptec Wireless Utility is easier to use and has extra security settings. Adaptec recommends using the Adaptec Wireless Utility instead of Zero Configuration. Follow the instructions provided in this section to disable Zero Configuration.

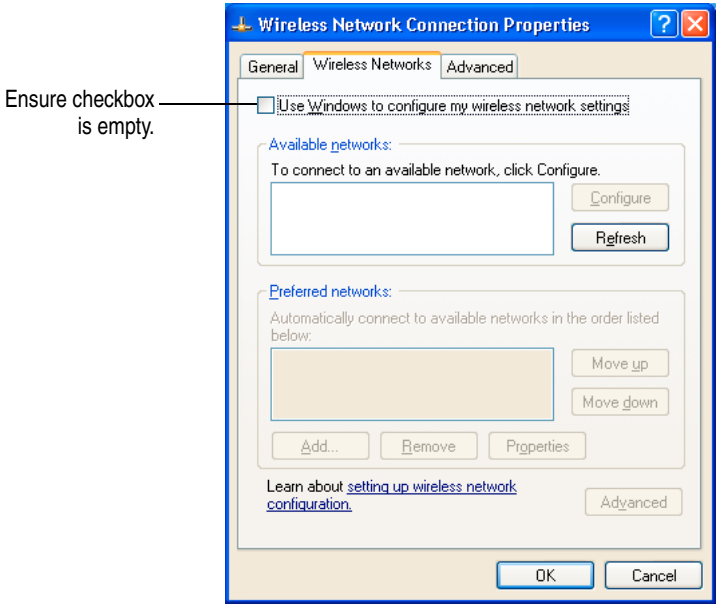
To disable Windows Zero Configuration:

1 Click the **Windows Zero Configuration** icon on your taskbar.

2 Click **Advanced**.



3 Ensure that the **Use Windows to configure my wireless network settings** box is deselected, then click **OK**.



4 Open the Adaptec Wireless Utility. (See page 29.) If the Adaptec Wireless Utility is already running, close it and re-open it.

Installing Network Protocols

Before you continue, make sure that you have completed these tasks:

- ❏ Reviewed *About Wireless Technology and LANs* on page 43 for a basic overview of WLANs.
- ❏ Installed the Wireless PCI Adapter. See page 5.
- ❏ Installed the device driver. See page 7.
- ❏ Installed the Adaptec Wireless Utility. See page 18.
- ❏ Disabled Zero Configuration *(Windows XP users only)*. See page 22.

The next step on the Installation Task List (page 4) is installing *network protocols*. Network protocols are rules that determine how devices on a network communicate with each other.

Windows 2000/XP Users

If you are using Windows 2000 or Windows XP, your operating system automatically installed the necessary Network Protocols when you installed the Wireless PCI Adapter.

See *Connecting to the WLAN* on page 28 to continue.

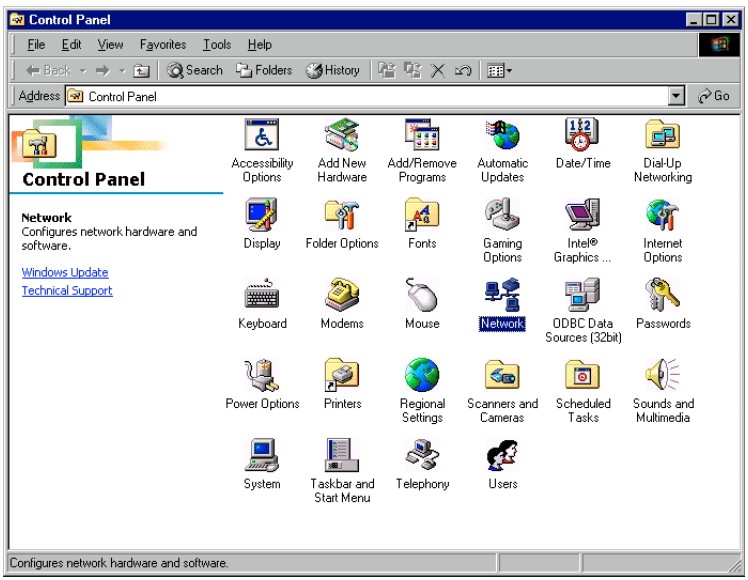
Windows 98SE/Me Users

To install the appropriate network protocols:

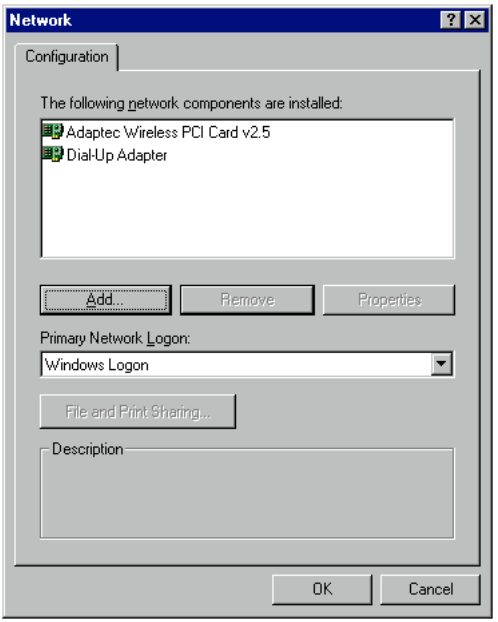
1 From the **Start** menu, click **Settings**, then click **Control Panel**.

2 Double-click **Network**.

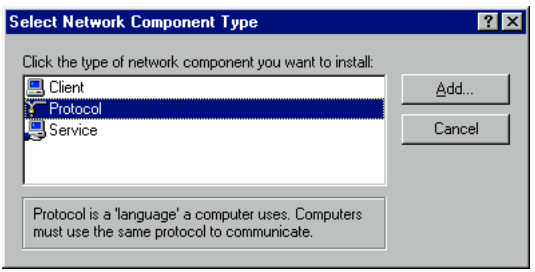
Note: Before you add a network protocol, verify that the protocol is not already installed. (Refer to your Windows documentation for instructions.) Never install duplicate protocols.



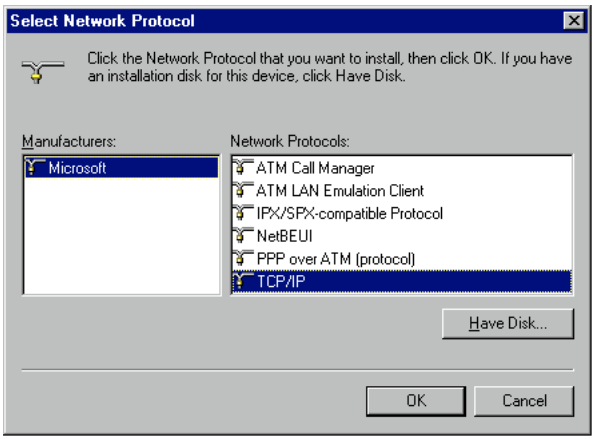
3 Select **Adaptec Wireless PCI Adapter**, then click **Add**.



4 Select **Protocol**, then click **Add**.



5 Under Manufacturers, select **Microsoft**, under Network Protocols, select **TCP/IP**, then click **OK**.



6 See *Connecting to the WLAN* on page 28 to continue with your last Installation Task.

Connecting to the WLAN

Before you continue, make sure that you have:

- ❏ Reviewed *About Wireless Technology and LANs* on page 43 for a basic overview of WLANs.
- ❏ Installed the Wireless PCI Adapter. See page 5.
- ❏ Installed the device driver. See page 7.
- ❏ Installed the Adaptec Wireless Utility. See page 18.
- ❏ Disabled Zero Configuration *(Windows XP users only)*. See page 22.

Adaptec Wireless products are preset to work together on a WLAN. If you are using *only* Adaptec Wireless products on your WLAN, you do not need to change the default settings on your Wireless PCI Adapter. You have completed the Installation Task List. See *Checking Your Network Connection* on page 31 for more information on using your Wireless PCI Adapter.

If you have any non-Adaptec brand Wireless products on your WLAN, or if you have changed the default settings of your other Adaptec Wireless products, you must adjust the default settings on your Wireless PCI Adapter to allow it to connect to your WLAN.

For your Wireless PCI Adapter to connect to your WLAN, these specific settings must be identical with those of every other Wireless device on your WLAN:

- Operating Mode (in Ad-hoc mode only)
- Wireless Network ID (SSID)
- Channel
- Encryption Settings
- Security Authentication
- Preamble Type

To link your Wireless PCI Adapter to your WLAN:

1 Open the **Adaptec Wireless Utility** by double-clicking the Adaptec Wireless Utility icon on your taskbar.

2 Click the **Configuration** tab.

a Ensure that the Operating Mode setting is correct for your WLAN. Each station on your WLAN must be set to the same operating mode. (See *Changing the Operating Mode* on page 33 for more information.)

b Check that the Wireless Network ID (SSID) is the same as the one used on your other WLAN stations.

You can also set your Wireless Network ID to the word any, which allows your Wireless PCI Adapter to connect to any Wireless device on your WLAN.

Note: Ensure that Access Points (APs) on your WLAN allow connections from Wireless devices set to any before using this setting.

c If you are using Ad-hoc mode, check that the Channel number is the same number used on your other WLAN station. If you are using Infrastructure mode, the Channel number is set by your AP. (See *channel* on page 46 for more information.)

d Make any necessary changes, then click **Apply Changes**.

3 Click the **Encryption** tab.

a Ensure that the Encryption Key Length setting is correct for your WLAN. Each station on your WLAN must have the same Encryption Key Length setting.

If your other WLAN stations are set to Disabled, you must set your Wireless PCI Adapter to Disabled.

If your other WLAN stations have Encryption enabled, you must enable Encryption on your Wireless PCI Adapter using *exactly the same* Encryption Key Length and WEP Key Entry Passphrase or Manual Entry information. (See *Changing the Encryption Settings* on page 35 for more information.)

b Make any necessary changes, then click **Apply Changes**.

4 Click the **Advanced** tab.

a If Encryption is enabled, ensure that the Security Authentication Type is set to **Auto**.

b Ensure that the Preamble Type is correct for your WLAN. Each station on your WLAN must have the same Preamble Type setting.

c Make any necessary changes, then click **Apply Changes**.

5 Click **OK** to close the Adaptec Wireless Utility.

You have completed the Installation Task List.

See *Checking Your Network Connection* on page 31 for more information on using your Wireless PCI Adapter.

For more information on customizing your WLAN, see *Changing the Set-up of Your WLAN* on page 32.

Checking Your Network Connection

You can check the status of your network connection three ways:

- Look at the Link LED on your Wireless PCI Adapter. If the LED is flashing, the adapter is searching for a connection. If it's glowing steady, the wireless connection is made. If it's dark, there is no wireless connection.
- Look at the Adaptec Wireless Utility icon on your taskbar. If the icon is green, the wireless connection is made. If the icon is red, the Wireless PCI Adapter is searching for a connection.

  Your Wireless PCI Adapter is connected to the WLAN if the Utility icon is green and emits "radio waves".

  Your Wireless PCI Adapter is disconnected from the WLAN if the Utility icon is red and shows no "radio waves".

- Double-click the **Adaptec Wireless Utility** icon on your taskbar.

  a Click the **Site Survey** tab.

  Information about currently available APs on your WLAN is displayed.

  b Click the **Link Status** tab.

  The current status of your Wireless PCI Adapter is displayed.

  c Click **OK** or **Cancel** to close the Adaptec Wireless Utility.

For more information, or for help with your WLAN, see *Changing the Set-up of Your WLAN* on page 32, *Troubleshooting* on page 41, or refer to the Adaptec Support Knowledgebase at ask.adaptec.com.

Changing the Set-up of Your WLAN

You can use the Adaptec Wireless Utility to change the set-up of your WLAN by:

- Changing the operating mode. See page 33.
- Choosing a specific AP. See page 34.
- Changing the Encryption (WEP) settings. See page 35.
- Changing the transfer rate. See page 38.
- Enabling the Power Saving Mode. See page 39.
- Adjusting the Transmit Threshold Control settings. See page 39.
- Saving and using configuration profiles. See page 40.

Changing the Operating Mode

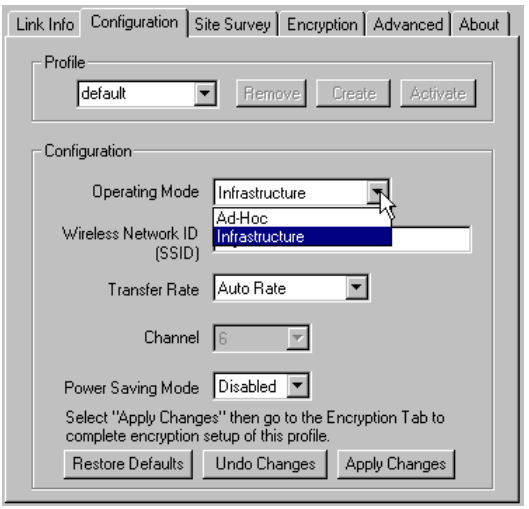
The Adaptec Wireless Utility offers two possible operating modes:

- **Ad-hoc mode** (sometimes referred to as *peer-to-peer mode*) allows two computers to connect to each other in wireless-to-wireless (or peer-to-peer) communication.
- **Infrastructure mode** allows multiple computers to interact, and is for WLANs that include an AP or Router.

To change the operating mode of your Wireless PCI Adapter:

1 Open the Adaptec Wireless Utility. See Step 1 on page 29.

2 Click the **Configuration** tab.



3 In the Operating Mode drop-down box, select your chosen operating mode, as shown above.

4 Click **Apply Changes**.

5 Click **OK** to close the Adaptec Wireless Utility, or see *Connecting to the WLAN* on page 28 for additional information.

Choosing an Access Point

You can choose to connect to a specific AP from a list of all APs currently available to your Wireless PCI Adapter. You might want to do this if you want to connect to a different WLAN.

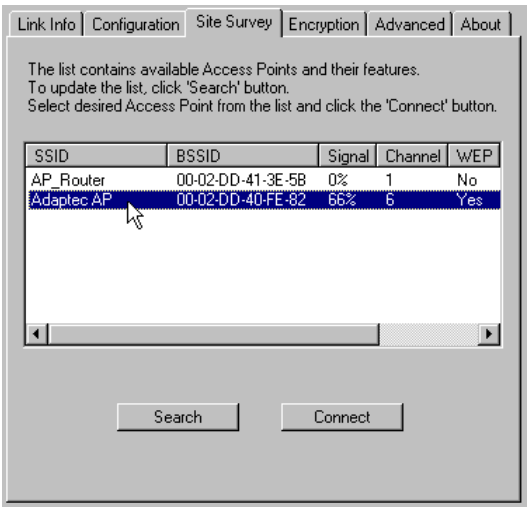
To connect to a specific AP:

1 Open the Adaptec Wireless Utility. See Step 1 on page 29.

2 Click the **Site Survey** tab.

Available APs are listed. Click **Search** to find more APs, if required.

3 Click on your chosen AP.



4 Click the **Link** tab and ensure that the AP's signal strength and link quality are acceptable.

5 Click **Connect**.

Once the connection is made, the Adaptec Wireless Utility opens the Link Status page, which shows you the connected Wireless network.

6 Click **OK** to close the Adaptec Wireless Utility.

Changing the Encryption Settings

Wired Equivalent Privacy (WEP) is a security feature that encrypts the data being sent over the radio waves of your WLAN.

Disabled encryption allows your Wireless devices to share data in plain text. The default Encryption Key Length setting is *Disabled*.

Setting encryption to **64-Bit** or **128-Bit** encryption limits data sharing and increases data security, but may slow data transmission.

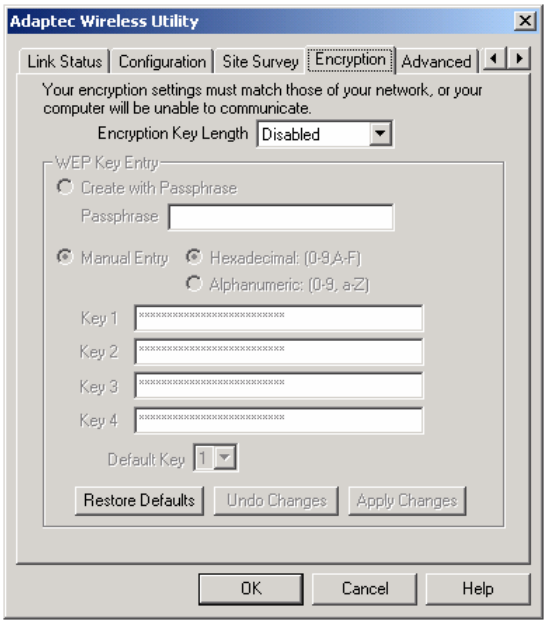
Set the level of security you require for your WLAN.

Note: For all the computers on your WLAN to communicate with each other and share data, they must have identical encryption (WEP) settings.

To change the encryption setting of your Wireless PCI Adapter:

1 Open the Adaptec Wireless Utility. See Step 1 on page 29.

2 Click the **Encryption** tab.



3 In the Encryption (WEP) drop-down box, select the setting you want.

4 If you select either **64-Bit** or **128-Bit**, you must create WEP keys, which control encryption, and set a *default key*. (The default key determines which of the four key sets is used for encryption and decryption.) See the next section to continue.

Setting the WEP Keys

WEP keys can be numeric, alphabetic, or a combination of both. You can choose between Hexadecimal, which restricts you to numbers 0–9 and letters A–F, and Alphanumeric, which restricts you to numbers 0–9 and letters a–z/A–Z.

- Adaptec recommends that you create the keys manually if you have any non-Adaptec brand devices on your WLAN. Go to *Creating the Keys Manually* below to continue.
- If you have *only Adaptec brand products* on your WLAN, you can create a passphrase that automatically generates the required keys and sets a default key. Go to *Creating the Keys with a Passphrase* on page 37 to continue.

Creating the Keys Manually

1 Click **Manual Entry**, then choose either **Hexadecimal** or **Alphanumeric**.

2 Enter the keys in the Key 1 to Key 4 text boxes.

The number of characters in your key depends on the encryption key length:

- 64-bit keys require 10 Hexadecimal or 5 Alphanumeric characters
- 128-bit keys require 26 Hexadecimal or 13 Alphanumeric characters.

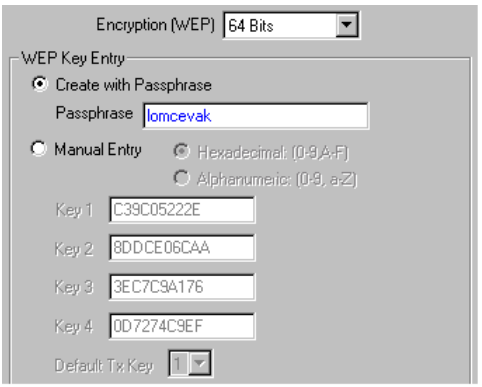
3 Click **Apply Changes**. (You can restore the default encryption settings at any time by clicking **Restore Defaults**.)

4 Click **OK** to close the Adaptec Wireless Utility.

Creating the Keys with a Passphrase

1 Click **Create with Passphrase**, then type in your chosen word or phrase in the Passphrase text box.

As you type, the Adaptec Wireless Utility will auto-generate the required keys and set a default key. (In the example below, the passphrase lomcevak generated the four unique keys shown and set the default key to 1.)



2 Click **Apply Changes**. (You can restore the default encryption settings at any time by clicking **Restore Defaults**.)

3 Click **OK** to close the Adaptec Wireless Utility.

Changing the Transfer Rate

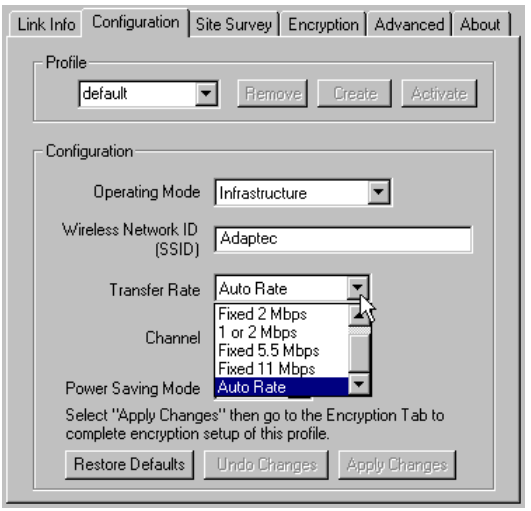
The default transfer rate setting, *Auto Rate*, allows your Wireless PCI Adapter to automatically adjust its transfer speed for optimal performance and the longest operating range. Adaptec recommends that whenever possible, you maintain the Auto Rate setting.

However, if your Wireless PCI Adapter's transfer rate changes frequently, you can set a lower transfer rate to achieve a more stable connection. The fixed rate speed options are 11 Mbps (the highest rate), 5.5 Mbps, 1 or 2 Mbps, 2 Mbps, or 1 Mbps.

To change the transfer rate for your Wireless PCI Adapter:

1 Open the Adaptec Wireless Utility. See Step 1 on page 29.

2 Click the **Configuration** tab.



3 In the Transfer Rate drop-down box, select the transfer rate you want, as shown above.

4 Click **Apply Changes**, then click **OK** to close the Adaptec Wireless Utility.

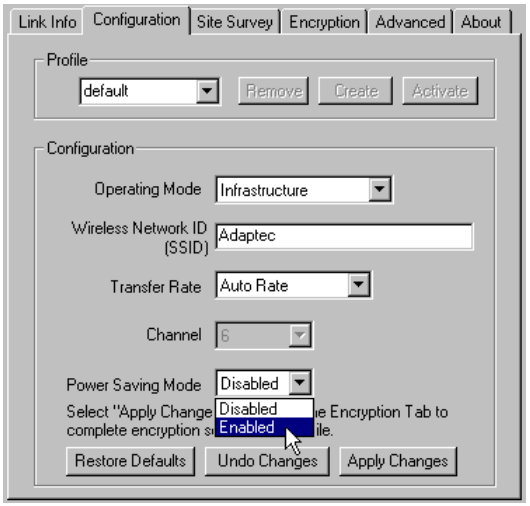
Enabling the Power Saving Mode

You can enable the Power Saving Mode if you want your Wireless PCI Adapter to enter sleep mode when not transmitting data.

To enable Power Saving Mode:

1 Open the Adaptec Wireless Utility. See Step 1 on page 29.

2 Click the **Configuration** tab.



3 In the Power Saving Mode drop-down box, select **Enabled**, as shown above.

4 Click **Apply Changes**, then click **OK** to close the Adaptec Wireless Utility.

Adjusting the Transmit Threshold Control Settings

Changes to the Transmit Threshold Control settings can affect overall network performance. Adaptec *highly recommends* that these settings be left at their default values.

Saving and Using Configuration Profiles

You can save your Wireless PCI Adapter set-ups in different profiles for use in different working environments. Using saved profiles removes the need to set up (reconfigure) your Wireless PCI Adapter each time you move from one WLAN to another. For instance, you may wish to save two profiles if you use both an office WLAN and a home WLAN.

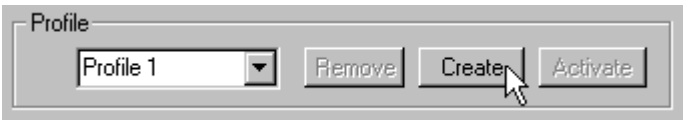
The default profile contains the default settings of your Wireless PCI Adapter.

To save a new profile:

1 Open the Adaptec Wireless Utility. See Step 1 on page 29.

2 Click the **Configuration** tab.

3 In the drop-down box, type a new profile name, then click **Create**.



The utility creates a profile containing the current configuration settings.

Any configuration changes you make will associate with the new profile if you click **Apply Changes**.

To use an existing profile:

1 Select the profile from the drop-down box.

2 Click **Activate**.

To delete an existing profile:

1 Select the profile from the drop-down box.

2 Click **Delete**.

Troubleshooting

If you encounter difficulties installing or using your Wireless PCI Adapter, work through these troubleshooting tips.

- Ensure that the adapter is seated evenly in the PCI slot.
- Ensure that the antenna is properly attached.
- Check that the driver installed properly. Look in Device Manager under Network Adapters. If there is a yellow exclamation mark (!) on driver name, the driver is not installed properly.

  If the driver did not install, try moving the adapter to a different PCI slot.

My computer cannot recognize the Wireless PCI Adapter.

Make sure that the PCI slot is enabled in your computer's BIOS. Refer to your computer's documentation for instructions.

My computer cannot link to the other Wireless devices on the WLAN.

Ensure that you have configured your Wireless PCI Adapter to work with the other Wireless devices on your WLAN. Work through the procedure provided in *Connecting to the WLAN* on page 28.

If you have enabled WEP encryption, ensure that the WEP keys you've set match *exactly* with the WEP keys of your other Wireless devices.

Note: The same passphrase used on different brands of Wireless devices may not generate identical WEP keys. If you have any non-Adaptec brand Wireless devices on your WLAN, Adaptec recommends that you enter the WEP keys manually, not with a passphrase, to ensure that all WEP keys on your WLAN are identical. See *Setting the WEP Keys* on page 36 for more information.

My Adaptec Wireless Utility icon is red. The Link LED on my Wireless PCI Adapter is not on.

Your Wireless PCI Adapter is not linked to the WLAN. You may be outside the range of available APs.

1 Open the Adaptec Wireless Utility. See Step 1 on page 29.

2 Click the **Site Survey** tab.

Available APs are listed. Click **Search** to find more APs, if required.

3 Select an AP, then click **Connect**.

If a link is made, the Adaptec Wireless Utility icon turns green (see page 31) and the Link LED on your Wireless PCI Adapter lights up.

If no link is made, click the **Link** tab. If the Link Quality or Signal Strength values are lower than 25 percent, it's unlikely that you'll be able to connect to that AP.

Click **Re-Scan** to search for other available APs and repeat Step 3 if possible.

You may need to reposition your computer so that your Wireless PCI Adapter is closer to an AP.

4 Click **OK** to close the Adaptec Wireless Utility.

About Wireless Technology and LANs

This section provides a general overview of Wireless technology and LANs. There are many books and Web sites dedicated to this topic that can provide a more comprehensive explanation.

What's a LAN?

A *network* is a group of computers that are connected together in a way that lets them share and exchange information and resources.

A *Local Area Network*, or LAN, is a network of computers that are in the same general physical location, usually within a building or small group of buildings. Computers on a LAN can share devices such as printers or scanners, they can share and exchange files without using floppy disks or CDs, and they can all use a single Internet connection.

What's a Wireless LAN?

A Wireless LAN (WLAN) uses radio signals instead of cables or wires to connect all the computers in the network.

There are different types of Wireless networks, each with it's own set of features and benefits. Adaptec Wireless Network products are based on the Wi-Fi standard (wireless fidelity, like high fidelity or Hi-Fi in audio equipment), which means that they communicate at a maximum speed of 11 Mbps (Megabits per second) within a radius of up to 1000 feet.

How Do I Create a Basic WLAN?

A WLAN can be as simple as two computers, each installed with a Wireless Network Interface Card (NIC), such as Wireless USB adapter or Wireless PC Card. You can expand your WLAN to include more computers, and you can incorporate a WLAN into a pre-existing wired LAN by using hubs, Wireless APs, Wireless Routers, and additional Wireless NICs.

Go to the Adaptec Web site at www.adaptec.com for more information on Wireless products.

What About Security?

You have multiple options for adding security to your WLAN. Set security according to the needs of your network.

- You can limit access to parts of the network by setting passwords and creating special shared files. Refer to your operating system's documentation for more information.
- You can protect your network from intrusion by the outside world (via the Internet) by installing a router. Go to the Adaptec Web site at www.adaptec.com for more information on Adaptec's Wireless Router.
- You can exclude unauthorized users from your WLAN by using the security and encryption features built into your Wireless device. See *Connecting to the WLAN* on page 28 and *Changing the Set-up of Your WLAN* on page 32, and refer to your other Wireless devices' documentation for more details.

Technical Specifications

Standards	IEEE 802.11b PCI Interface
Channels	11 channels (US, Canada) 13 channels (Europe) 14 channels (Japan)
Antenna	External antenna with reversed SMA connector
Frequency	2.4 to 2.4835 GHz (Industrial Scientific Medical Band)
Data Rate	Up to 11 Mbps
Operating Ranges	Indoor (varies depending on environment): ■ Up to 50 M @ 11 Mbps ■ Up to 80 M @ 5.5 Mbps Outdoor (varies depending on environment): ■ Up to 150 M @ 11 Mbps ■ Up to 300 M @ 5.5 Mbps
Temperature Ranges	Operating: 0 ~ 55 °C Storage: -25 ~ 70 °C
Humidity	10% to 90% (non-condensing)

Glossary

Access Point

An Access Point (AP) is a wired controller that sends data to the wireless NICs installed in your network computers, and receives data back from them. An AP is often connected to the network computer that has Internet access, or is directly connected to the Internet by a DSL or cable modem. The AP then allows other stations on your WLAN to access the Internet.

Ad-hoc mode

See operating mode.

channel

Your Wireless device communicates with other devices on your WLAN over a specific channel. The channel is similar to a radio channel—any Wireless device linking to your Wireless device must be "tuned" to the same channel.

In Infrastructure mode, the channel is selected by the AP or Router. It automatically selects a channel from the range available for your geographical location (11 channels are available for use in the United States) and communicates that channel to your Wireless device. In Ad Hoc mode only, you can set the channel yourself.

device driver

A device driver is a software program that lets an adapter (such as a PC card, PCI card, or USB adapter) or any other device (such as a printer or CD-ROM drive) communicate with the computer that it's connected to.

Ethernet

Ethernet is a popular networking system that uses NICs and cables (and often, other networking devices such as bridges and hubs) to create a LAN.

firewall

A firewall is a security device that helps prevent users outside your network from accessing your LAN or WLAN. A firewall uses special software that keeps unauthorized users out of your network.

hot-swap

To hot-swap is to remove or attach a device without first shutting off your computer.

hub

A hub works with a computer like a power strip works with an electrical outlet—it multiplies the number of ports you have so that you can have more devices plugged in at the same time.

Infrastructure mode

See operating mode.

LAN

Stands for Local Area Network. LANs are *wired* networks.

LED

Stands for Light-Emitting Diode.

MAC address

A Media Access Control (MAC) address is a 12-character string that uniquely identifies each network device on your network (for instance, your Wireless USB Adapter or Wireless AP). A MAC address is built into each device. Each network device is labelled with its MAC address.

network

A network is two or more computers connected so that they can share information, equipment, and programs.

network device

A network device is any device (such as an AP or a computer with a NIC) that connects to the network. See also transfer rate.

network protocols

Network protocols are rules that determine how devices on a network communicate with each other.

NIC

Stands for Network Interface Card. A Wireless NIC is a computer card (such as a Wireless PCI adapter, Wireless PC Card, or Wireless USB adapter) that lets your computer link to a WLAN.

operating mode

Ad-hoc mode (sometimes referred to as peer-to-peer mode) allows two computers to connect to each other in wireless-to-wireless (or peer-to-peer) communication. Do not choose Ad-hoc mode if your WLAN contains an AP and multiple computers.

Infrastructure mode is for WLANs that include an AP or Router and multiple computers.

PCI

Stands for Peripheral Component Interconnect.

peer-to-peer mode

See operating mode.

preamble

A preamble is a signal used to synchronize the transmission timing on your WLAN. A series of transmission pulses is sent ahead of the data to signal a new transmission. This ensures that Wireless devices receiving the data correctly interpret when the transmission starts.

The Preamble setting for your Wireless device must be identical to the Preamble setting on your AP.

SSID

See Wireless Network ID.

transfer rate

The transfer rate is the speed at which your Wireless device is sending data. It is expressed in Mbps.

The default transfer rate setting, *Auto Rate* (or *Automatic*), allows your Wireless device to automatically adjust its transfer speed for optimal performance and the longest operating range. Adaptec recommends that whenever possible, you maintain the Auto Rate setting.

However, if your Wireless device's transfer rate changes frequently, you can set a lower transfer rate to achieve a more stable connection. The fixed rate speed options are 11 Mbps (the highest rate), 5.5 Mbps, 2 Mbps, 1 or 2 Mbps, or 1 Mbps.

USB

Stands for Universal Serial Bus.

WEP

Wired Equivalent Privacy (WEP) is a security feature that provides confidentiality (by encrypting the data being sent over the radio waves of your WLAN) and authentication (by using a shared key between the Wireless device and the AP).

WEP key

WEP keys control encryption.

WEP keys can be numeric, alphabetic, or a combination of both. You can choose between Hexadecimal, which restricts you to numbers 0–9 and letters A–F, and Alphanumeric, which restricts you to numbers 0–9 and letters a–z/A–Z.

The number of characters in your key depends on the encryption key length: 64-bit keys require 10 Hexadecimal or 5 Alphanumeric characters; 128-bit keys require 26 Hexadecimal or 13 Alphanumeric characters.

Wireless device

A Wireless device (or Wireless network device) is any Wireless device that connects to the network. See also network device.

Wireless Network ID

The Wireless Network ID (also referred to as the SSID) is like a secret code that your AP and your Wireless devices share to prevent unauthorized users from accessing your WLAN. Your Wireless devices can only connect to your AP if they have the same SSID as the AP. Wireless devices in Ad-hoc mode must be set to the same SSID.

The Wireless Network ID is case-sensitive and must not exceed 32 characters.

WLAN

Stands for Wireless Local Area Network. WLANs use radio signals instead of wires to connect network stations.

WLAN station

See transfer rate.

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